irradiating the organ by means of an X-ray device which includes an X-ray source and an X-ray detector,

detecting a motion signal (H, B) which is related to the periodic motion of the body organ simultaneously with the acquisition of projection data sets (D_0, D_1, ..., D_{16}),

Concld C1

successively acquiring the projection data sets (D_0, D_1, ..., D_{16}) required for the formation of a three-dimensional image data set from different X-ray positions (p_0, p_1, ..., p_{16}), which x-ray positions are situated in one plane,

controlling the X-ray device by means of the motion signal (H, B) to acquire a projection data set (D_0, D_1, ..., D_{16}) during a low-motion phase of the body organ in each X-ray position (p_0, p_1, ..., p_{16}) required for the formation of the three-dimensional image data set, and

B1 Cont

using the projection data sets (D_0, D_1, ..., D_{16}) acquired during the low-motion phases for the formation of the three-dimensional image data set.

2. (Amended) The method as claimed in claim 1, wherein only the projection data sets (D_0, D_1, ..., D_{16}) that have been acquired during the same motion phases (H_1, B_1) are selected and used.

Sub D7

3. (Amended) The method as claimed in claim 1, wherein the various X-ray positions (p_0, p_1, ..., p_{16}) are successively occupied in an X-ray cycle (R_1), that a plurality of X-ray cycles (R_1, R_2) are successively completed, and the X-ray device is controlled by means of the motion signal (H, B) in such a manner that each X-ray cycle (R_1, R_2) commences in a different phase of motion (H_1, H_2; B_1, B_2, B_3) of the body organ.

Sub D7 cont.

D

4. (Amended) The method as claimed in claim 1, wherein the X-ray device is controlled by means of the motion signal (H, B) such that projection data sets (D_0, D_1, ..., D_{16}) are acquired only during low-motion phases (H_1; B_1, B_3) of the body organ.

B1 cont

5. (Amended) The method as claimed in claim 1, wherein the X-ray device is controlled by means of the motion signal (H, B) such that the X-ray source is switched on so as to acquire projection data sets (D_0, D_1, ..., D_{16}) exclusively during low-motion phases (H_1; B_1, B_3) of the body organ.

6. (Amended) The method as claimed in claim 1, wherein a respiratory motion signal (B) which is dependent on the patient's respiration is acquired as a motion signal.

7. (Amended) The [A] method as claimed in claim 1, wherein a cardiac motion signal (H) which is dependent on the motion of the heart is acquired as the motion signal.

8. (Amended) The method as claimed in claim 7, wherein in addition to the cardiac motion signal (H) there is acquired a respiratory motion signal (B) which is dependent on the respiratory motion, and the respiratory motion signal (B) is used to ensure that only the projection data sets (D_0, D_1, ..., D_{16}) that have been acquired during the same respiratory motion phases (B_1) are used to form the three-dimensional image data set.

Sub D7 cont.

9. (Amended) The method as claimed in claim 8, wherein the respiratory motion signal (B) is used to correct, during the formation of the three-dimensional image data set, the projection data sets (D_0, D_1, ..., D_{16}) that have been acquired in different respiratory motion phases (B_1, B_2, B_3) and the shifts in position of the body organ resulting therefrom.

B1 cont

10. (Amended) The method as claimed in claim 6, wherein the respiratory motion signal (B) is used to inform the patient that a desired respiratory motion phase (B_1) has been reached

Sub D1 cont.

during which the acquisition of the projection data sets (D_0, D_1, ..., D_{16}) takes place.

11. (Amended) The method as claimed in claim 1, wherein the motion signal (H, B) is used to control the X-ray device in such a manner that projection data sets (D_0, D_1, ..., D_{16}) are acquired from individual, ~~selected~~ X-ray positions (p_0, p_1, ..., p_{16}).

sub C2

12. (Amended) An X-ray device which includes:

an X-ray source and an X-ray detector for the acquisition of a plurality of projection data sets (D_0, D_1, ..., D_{16}) from different X-ray positions (p_0, p_1, ..., p_{16}) and for the formation of a three-dimensional image data set of a periodically moving organ of the body of a patient (5) from the projection data sets (D_0, D_1, ..., D_{16}), and

B1 cont

means for measuring a motion signal (H, B) which is related to the periodic motion of the body organ and is acquired simultaneously with the acquisition of the projection data sets (D_0, D_1, ..., D_{16}),

wherein there is provided an arithmetic and control unit for controlling the X-ray device and for forming the three-dimensional image data set such that the projection data sets (D_0, D_1, ..., D_{16}) required for the formation of the

three-dimensional image data set are successively acquired from different X-ray positions (p_0, p_1, ..., p_{16}) which are situated in one plane,

wherein a projection data set (D_0, D_1, ..., D_{16}) is acquired during a low-motion phase of the body organ in each X-ray position (p_0, p_1, ..., p_{16}) required for the formation of the three-dimensional image data set, and

wherein the projection data sets (D_0, D_1, ..., D_{16}) acquired during the low-motion phases are used exclusively for the formation of the three-dimensional image data set.

SUB B8

13. (Amended) The X-ray device as claimed in claim 12, wherein the means for measuring the motion signal are arranged to measure a cardiac motion signal (H) which is dependent on the cardiac motion.

B1 cont

14. (Amended) The X-ray device as claimed in claim 12, wherein the means for measuring the cardiac motion signal (H) include one of: an electrocardiography device and a pulse oxymetry device.

15. (Amended) The X-ray device as claimed in claim 12, wherein the means for measuring the motion signal are